PROTEC®
medizintechnik

English

OPTIMAX®

Film Processor
Operation Manual

Machine No.:	
Type:	
Date of Installation:	
Issued:	05-2006/3.4

Subject to technical alterations

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EU-Declaration of Conformity

PROTEC® Medizintechnik declares, that the product

Description:	OPTIMAX
Machine type:	X-Ray-Film Processor
Model no.	117x-y-0000 x is a number between 0 and 9, y is a number between 1 and 9

conforms to the following harmonized standards:

Safety:	IEC 61010-1:2001 + A1:92 + A2:95; DIN 1988 T4:12/1988; UL 3101-1; CSA 22.2-1010-1
EMC:	EN 50081 Part 1, 03/1993; EN 50082 Part 1, 03/1993

according to the regulations of:

- the Medical Device Directive 93/42/EEC “class 1”,
- the Low Voltage Directive 73/23/EEC and the
- EMC Directive 89/336/EG

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Supplementary Guidelines:

- DIMDI: DE / 0000042967
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ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

TÜV MANAGEMENT SERVICE

The Certification Body of TÜV Management Service GmbH
certifies that

PROTEC® Process Technology made in Germany

PROTEC® Medizintechnik GmbH & Co. KG
Lichtenberger Straße 35
D-71720 Oberstenfeld

has established and applies
a Quality Management System for

Design, production and sales of film processors, chemical mixers and accessories.

An audit was performed, Report No. **70017993**
Proof has been furnished that the requirements according to

ISO 9001:2000

are fulfilled.
Certificate Registration No. **12 100 20849/1 TMS**

Mannheim, 2003-12-08

Certification Body
of TÜV Management Service GmbH
Unternehmensgruppe TÜV Süddeutschland
Ridlerstraße 65
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Deutscher Akkreditierungs Rat
DAR
TGA-ZM-07-92

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Information on Liability
This manual has been checked for correctness. The instructions and specifications were correct at the time it was published. Future models may have modifications without prior notice. PROTEC® Medizintechnik does not take responsibility for damage caused direct or indirect by error, omission or non-conformity of the manual.

Caution (U.S.)
Federal Law restricts this device to sale by or on the order of a medical professional.

Introduction

The OPTIMAX® processor is a compact, automatic table-top processor. Due to the precision roller transport system, both sheet and roller films can be processed. The film materials are developed, fixed, rinsed and dried. The OPTIMAX® incorporates an automatic film-registration and a Stand-by mode. The developing solutions are temperature-regulated, circulated and automatically replenished.

This Operation Manual contains the most important instructions for installation, operation and servicing of this machine. Please read the provided information carefully to ensure reliable and satisfactory operation of your OPTIMAX®.

Technical Specifications

Film transport:	Continuous roller transport system
Film formats:	In general: Sheet and roll films up to 35.8 cm (14.1") width; roll films with leader from 70 mm (2.8") width; smallest film format 10x10 cm (4x4"). Mammography Type 1171: For processing Mammography Films. Graphic-Arts Type 1172: With cassette box (LxWxH) 35x13x12 cm (13.8x5.1x4.7") for processing roll films.
Processing capactiy:	129 films 24x30 cm (10x12") per hour (standard model, film fed in crosswise)
Process time:	Standard 90 s Mammography 135 s *Option 167 s
Linear speed:	Standard 56 cm/min. (22 in/min) Mammography 37 cm/min (14.5 in/min) *Option 30 cm/min (11.8 in/min)
Developer time:	Standard 25 s Mammography 37 s *Special 46 s
Tank capacities:	Developer, fixer and washing 5 litres each (1.3 gal)
Circulation system:	Developer and fixer are continiuously circulated by a circulation pump
Replenishment:	Automatic replenishment by film detection, in relation to film length
Developer temperature:	Adjustable 28 - 37 °C (82.4 - 98.6 °F)
Fixer temperature:	Adjusted to developer temperature by heat exchanger.
Water connection:	Permissible water pressure 2 - 10 bar (29 - 145 psi), permissible water temperature 5 - 30 °C (41 - 86 °F).
Water consumption:	1.9 litres per minute (0.5 gal/min) when processing.
Drain capacity:	7 litres per minute (1.85 gal/min)
Noise level:	Less than 58 dB(A).
Heat emission:	Stand-by: 0.1 kJ/s Processing: 1.4 kJ/s
Environmental conditions:	1) Temperature 18- 40 °C (51,6 - 104 °F), ventilated room, room temperature should be lower than set bath temperature. 2) Relative humidity lower than 80% up to 31 °C (80 °F), linear decreasing to 50% at 40 °C (104 °F) 3) Height above sea level less than 2000 m (6666 ft.) 4) Indoor use
Pollution degree:	2

System protection:	IP 20
Power source:	Electrical specifications are indicated on model nameplate. Type 117x-1-0000: 220 - 240 V~, 8.8 A, 50 Hz. Type 117x-2-0000: 220 - 240 V~, 8.8 A, 60 Hz. Machine tested for overvoltage category II according to IEC 1010 (EN 61010, VDE 0411) Type 117x-4-0000: 110 / 120 V~ ±10%, 15 A, 60 Hz.Machine tested for overvoltage category II according to UL 3101 and CSA 22.2-1010
Power consumption:	Stand-by: 0.12 kWh Processing: 1.4 kWh
Weight (processor):	Empty 35 kg (77 lbs) Filled 50 kg (110 lbs)
Dimensions (LxWxH):	77x59x42 (** 112) cm 30.3x23.2x16.5 (** 44.1)"
Floor space required:	0.45 m^2 (4.8 sqft)

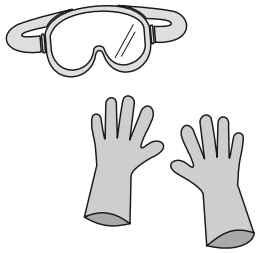
* Depending on machine type and used gears processors have different speeds.

** Height incl. optional working table resp. base cabinet.

Safety Instructions

To ensure the safe operation of this processor, installation and use should always conform to the instructions contained in this manual.

The developer and fixer chemicals used in the processor should be handled according to the manufacturer´s instructions. In general: Non-diluted chemicals are caustic. For this reason, chemicals should be handled very carefully. Avoid contact with skin, always wear protective clothing, gloves and glasses when handling the chemicals - for example, when mixing and refilling. Also when taking the racks out for cleaning or servicing. In case of chemicals getting into the eyes, rinse eyes immediately with cold, running water for approximately 15 minutes, and contact a doctor afterwards. Inhalation of chemicals can be dangerous to your health and should be avoided. For this reason, always ensure that the room in which the processor is installed is adequately ventilated.



Environmental regulations regarding the storage and disposal of waste chemicals should be obtained from the local water authorities and complied with.

Before opening the processor switch off the unit and unplug it from the electrical socket. Service and repairs must be performed by trained service technicians only. Use only manufacturers replacement parts.

Installation

1. Requirements for installation

a. Fresh water connection: Stop cock with 3/4" outer-thread diameter (washing machine connection), Water pressure 2 - 10 bar (29 - 145 psi).

   Drainage connection: Plastic tube - inner diameter 50 mm (2”) or larger. A ventilated syphon which serves as odor preventor should be included in the planning. The drainage tubes should be installed with a fall of minimum 5 %. Local Water Authorities regulations should be complied with.

b. Electrical connection: Fused wall socket with ground connection according to electrical data (see Technical Specification, page 5). It is also required to install a ground fault interrupt (with 25 A / 30 mA nominal error current).

Electrical connections should be carried out according to regulations by an electrician.

2. Set up of processor

Unpack the Processor. Remove cover and transport securing brackets on the sides of the roller racks. Remove roller racks - start with the dryer rack.

In 220-240 V version the OPTIMAX® is delivered as a tabletop processor with a two part floorplate. If the machine is upgraded with the optional stand or cabinet, the small plastic strip has to be removed.

In 110-120 V version the OPTIMAX®is delivered as a tabletop processor with a three part floorplate. If the machine is upgraded with the optional stand or cabinet, both small plastic strips and the metal plate have to be removed and a special main plate must be reconnected.

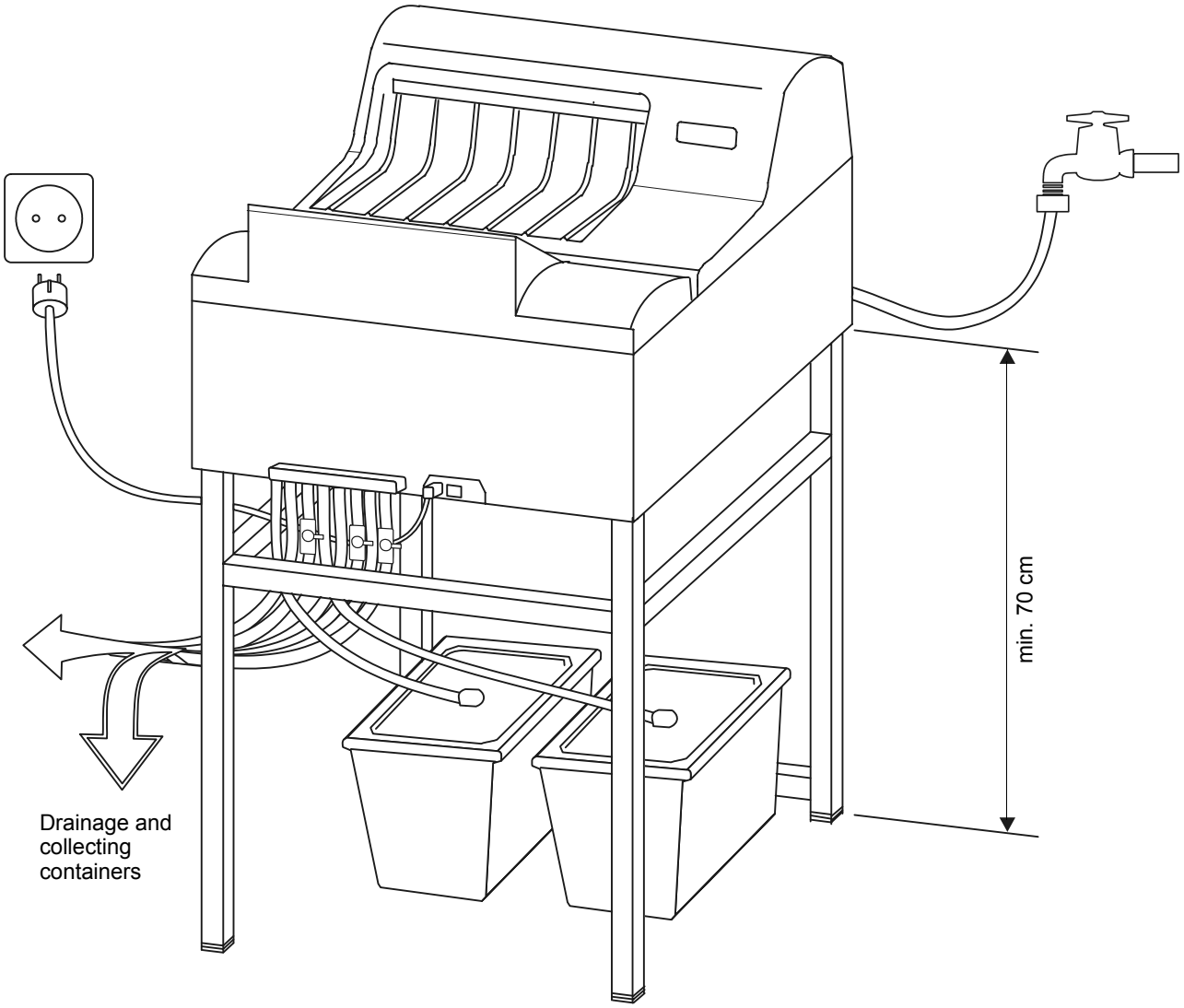
Table-top installation
In the event that the processor is to be installed on a work top or table, the adjustable feet should be levelled.

Attention!
Machine should not be installed on table-top without adjustable feet, as this would block the ventilation openings under the machine and cause overheating.

Installing on processor stand or base cabinet
In the event that the processor is to be installed on the stand or cabinet (optional accessory), the processor will be mounted directly to it. Mount processor according to manual included with stand or cabinet (the adjustable feet inside the accessory bag are not required).

Finally the processor needs to be leveled:
Place level across the sidewalls of processor and adjust the leveling feet accordingly. Replace the racks into the processor and close the latches.

3. Connecting the processor



Water connection: Connect the water hose which comes out from the processor's back to the fresh water supply.

All other hoses (see diagram page 8): Connect the enclosed hoses according to color system onto the front of the machine. Put hose clamps (enclosed in accessory bag) over hose end, before attaching to connection. Warm up hose end (with hot water or lighter) and push onto the respective connection. Finally push clamp over hose and connection.

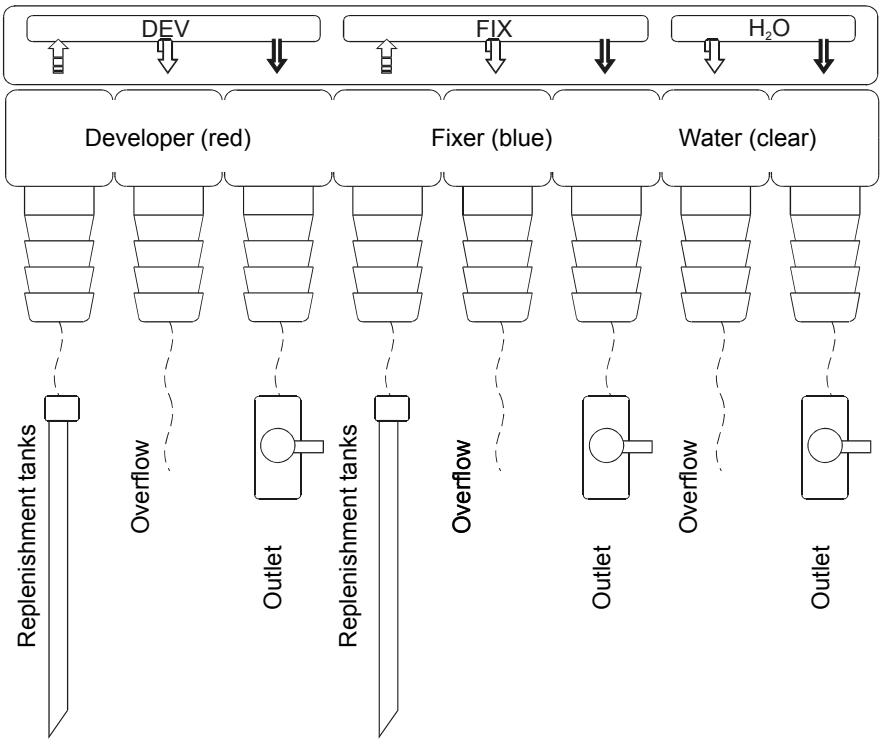
Cut hoses to required length. Then integrate the stop cocks into the three drainage hoses in such a position, that they are easy to reach.

Connect the suction pipes to the hose ends for the replenishment tanks using hose clamps. Put suction pipes through cover opening into respective replenishment tanks and snap them in.

The overflow and drainage hoses from the developer and fixer should be guided into their respective collecting containers.

The overflow and the drainage of the water can either be guided into the drainage syphon or into respective collection containers.

Hose connections



Pay attention to the correct color connections:

Developer:	red
Fixer:	blue
Water:	clear

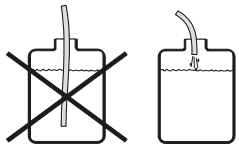
⇧ Replenishment

⇩ Overflow

⇓ Outlet

Danger of Overflow!

Use the included cable ties (accessory bag) to secure the hoses. Fix all hose ends which guide into syphon or collecting container, so that they do not drop into the liquid.

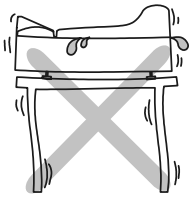


Very important:

The hose piping should be straight (without the hoses going up and down) with a constant fall. The hoses should be as short as possible and without bends and kinks. This is very important for the water overflow hose. Bad piping work will cause the machine to overflow!

Inform yourself of the local water board regulations regarding drainage. These regulations may differ from information in this manual, but they should be complied with.

If the machine is installed table-top, ensure that the table is stable enough and does not wobble.



Initial Operation

1. Test run

Important!
Processor should not be run dry!
Upon commissioning and every refilling the pumps must be vented.

a. Close the three drainage stop cocks and fill the tanks and replenishment containers with water. Open water inflow tap. Connect electrical socket and switch the machine on. Water now flows into water tank. The circulation pump activates. If fluid does not flow, an air lock may be present. Momentarily open the drain hose valves to ventilate the system.

b. Ventilation of the replenishment pump:
Set temperature dial to position “Manual pumping”. Keep dial to this position until no more air bubbles rise in the tanks.

c. Ventilation of the circulation pump:
If air is in the circulation pump, a loud running noise can be heard. Switch the machine off again. Open the stop cocks of the developer and fixer for five seconds and switch machine on again. Repeat this procedure until no more air bubbles are visible in the developer and fixer baths and until the circulation pump runs quietly.

d. Check all hose connections for leakage. Switch machine off and drain water out.

2. Fill processor with chemicals

Prepare chemicals inside the replenishment containers according to manufacturers instructions.

Fill up processor manually
By using a suitable container, pour chemicals into the respective tanks. First the fixer and then the developer. Caution: when filling, be sure that chemicals do no splash from one bath into another. When fixer solution is mixed with developer solution, the developer chemical is destroyed.

Snap each suction pipe into the respective cover of it’s replenishment container and close it carefully. Place containers under processor.

Using replenishment pump
Filling of processor can also be done by use of the replenishment pump (this takes much more time). Snap each suction pipe into the respective cover of it’s replenishment container and close it carefully. Place containers under processor. Now set temperature dial to “Manual pumping”. Keep dial in this position until tanks are filled. After 20 minutes this function stops automatically - to restart a cycle, turn dial to another position and return to “Manual pumping”. *Limitation:* The function may fill up tanks of developer and fixer to different levels. This may be due to different causes. If this happens, then use a suitable container to fill up the tanks completely.

Operation

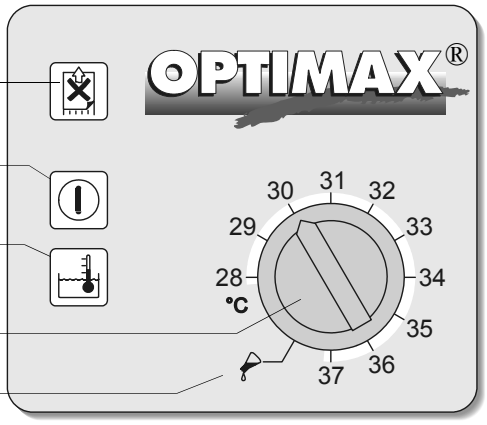
Short overview and control panel

LED displays

- **Film feed**
  Wait with the next film until light goes off.
- **Power**
  When power is on the LED lights up.
- **Bath temperature**
  Flashes when temperature is not reached.

Temperature dial

Manual pumping

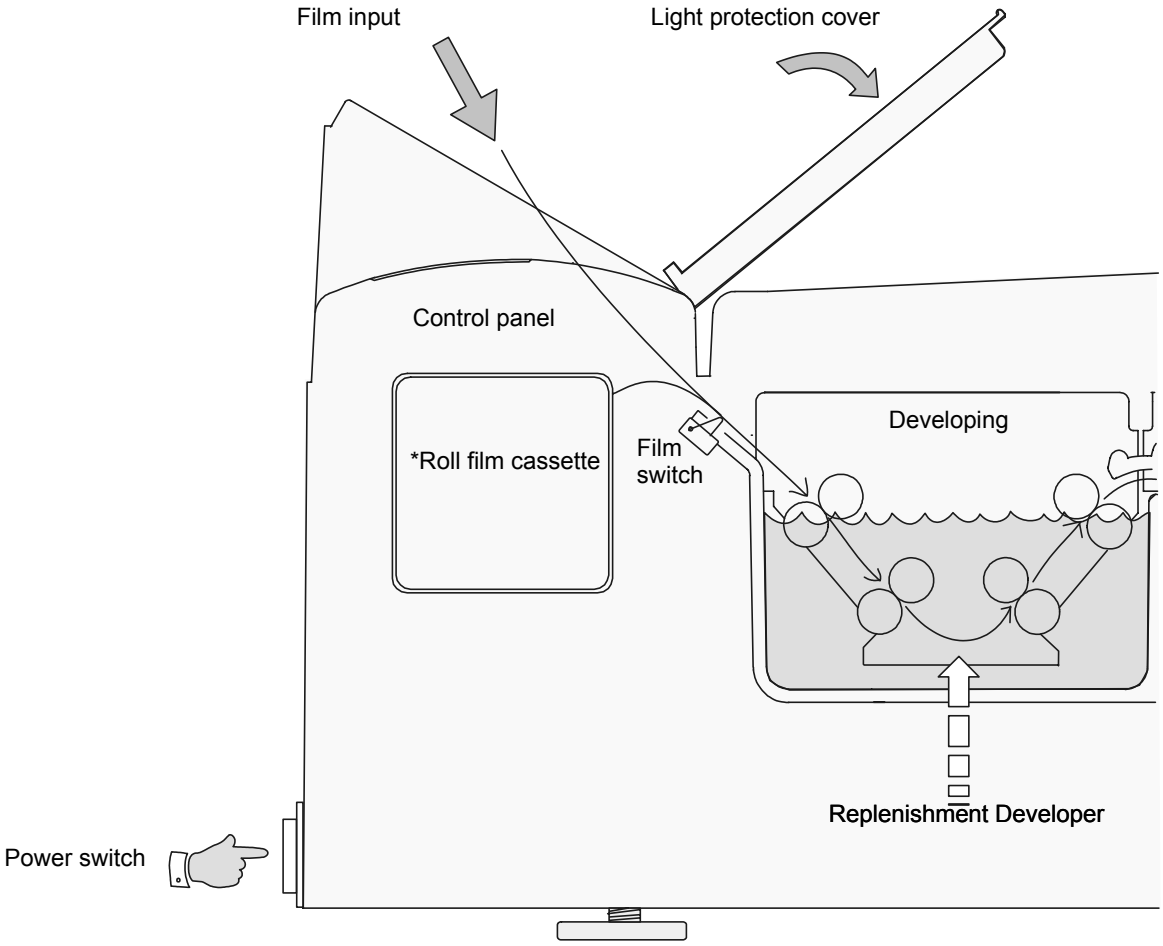


Important!

Safety function stops film transportation when cover is removed. Therefore keep cover placed on the machine when processing films.

*Only machines with cassette box:

When processing roll films in cassettes, pull approx. 10 cm of film out of the cassette and fold the corners. Place cassette into cassette box and feed film into the infeed. Notice that on processors with cassette box, the film switch is located in the middle of the infeed.



Attention:

Upon first operation and each refilling of a developer check the function of the circulation pump and vent the pump if required (see page 9).

Before use...

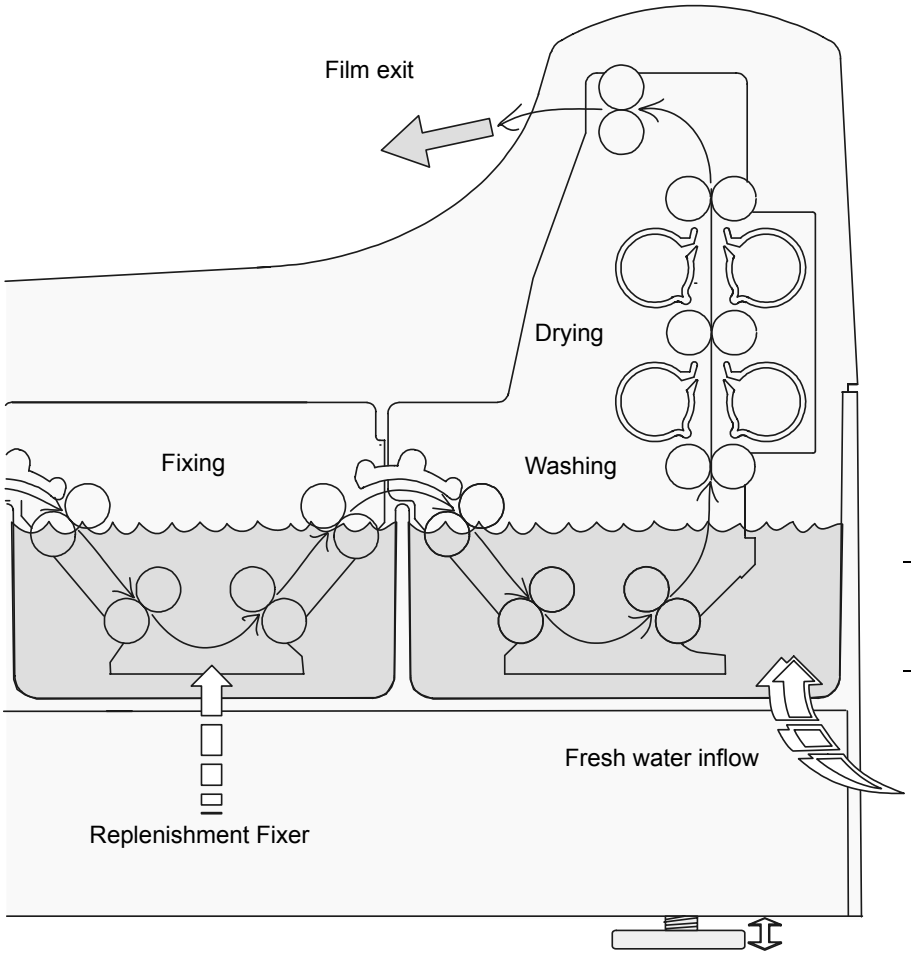
1. Close water-drainage stop cock.
2. Open water tap.
3. Switch processor on.
4. Check liquid level in replenishment and drainage collecting containers.
5. Wait until the developer temperature is reached. If the temperature has not been reached, the bath temperature light is flashing.
6. Run cleaning films through processor.

Working procedure

7. Processing films:
   Open light protection cover. Important: Put film first on left side of feed tray and then feed in. During processing films please watch the display “Film Feed”. If this is lit, wait until it goes off again and an audible tone can be heard, before inserting the next film.

After work...

8. Switch processor off.
9. Close water tap.
10. Open water-drainage stop cock and drain water out of the machine.



Do not place any object on the processor.

Stand-by mode

When no film is being processed, the machine switches to Stand-by. The chemicals remain at a constant temperature. The film transport and water inflow activate at intervals to avoid crystallization of the chemicals on the transport rollers. Entry of the next film is possible at any time.

Switching the machine on

The processor is switched on at the main power switch on the front side. After switching on, the water tank will be filled up and a replenishment cycle will be carried out. The developer will be heated up. Until the tempearture is reached the LED-display “Bath temperature” will be flashing. When the processor is ready and the bath temperature reached, a long signal tone can be heard.

Bath temperature

The processor heats up the chemicals automatically to the dial-set temperature. When this temperature is reached for the first time after switching on the machine, a long signal tone can be heard. This is also the case when the temperature is changed by the dial switch.

If the difference between actual and dial-set temperature is more than 1 °C, the bath temperature LED will flash. If a film has been fed in and the temperature is not reached, a warning sound will be heard.

Display “Film feed”

If films are fed into the processor without clearance one after an other, then this may cause a film jam. The light “Film feed” is on during feeding of a film. After the film has been fed in completely the light goes off. Additionally an audible tone indicates that the next film can be fed in.

Manual pumping

The function “Manual pumping” activates the replenishment pump and it pumps chemicals into the tanks in addition to automatic replenishment. Turn the dial to the position “Manual pumping” and chemicals will be pumped into the tanks. This function is only available during stand-by (no film in process). If the dial is left in this position, the pumping function is stopped automatically after 20 minutes. To restart a cycle turn dial to a temperature and return to “Manual pumping”.

Please note: Films cannot be processed when dial is set to “Manual pumping”. Also bath temperature is set automatical to 28 °C during “Manual pumping”. After ending the manual pumping the temperature must be set again by turning the dial. It takes some time until the temperature is reached (look at the bath temperature display).

Both chemical pumps - fixer and developer - are driven parallel by only one motor and therefore they operate in unison.

Anti-crystallisation function

During the stand-by mode, the film transport, the dryer ventilation, the dryer heater and the water inflow are activated every 20 minutes for a period of 20 seconds. This prevents the build-up of crystals on the rollers.

Time replenishment (Anti oxidation function, Flood replishment)

During the stand-by, the developer chemicals are subject to change which causes their deterioration. By means of the time replenishment, a replenishment cycle is activated after 60 minutes without replenishment. The pump runs for 15 seconds. With this function, the quality of the developer chemicals are maintained even when standing idle for long periods.

Automatic replenishment

Depending on the processed amount of films the chemicals are replenished automatically. This is done by pumping chemicals from the replenishment containers. By means of the film-detection switch at the film feed tray, the surface of the processed films are calculated and after $^{2}0{,}25$ m^2 a replenishment cycle of 40 seconds duration is automatically activated. The replenishment quantity per cycle (at pump setting 100 %) amounts to 150 ml. The chart below shows the replenishment rate in ml per m^2 surface in reliance on film width and setting of the pump.

	Replenishment Rates	
Film width	**Setting of replenishment pump***	
	100%** (85 %)	75 % (62 %)
35 cm	600 ml/m^2	450 ml/m^2
24 cm	870 ml/m^2	650 ml/m^2
18 cm	1150 ml/m^2	875 ml/m^2

*Setting at 50 Hz current resp. settings at 60 Hz current are in brackets

**Standard setting

Rollfilms and paper films

Rollfilms can be transported into the machine when a leader film (10x10 cm) is attached, that has been prepared with a chemical resistant adhesive tape.

Rollfilms without leader films and paper should be folded on the corners as per diagram displayed on the right.

Care

Daily Care

Before use...

- Remove dirt and dust from film feed tray with soft, lint-free cloth.
- Run 2 - 3 cleaner films through processor to remove all accumulated dirt and dust from the rollers.
- Check the fluid level in the replenishment containers and if necessary refill.

After use...

- When work has been completed at the end of the day, drain water out of the machine. This avoids the growth of algae in the water.

Attention: To prevent damage to the processor, avoid liquid contact, except for designated areas such as the processor tanks. Use extreme care to prevent any liquid contact with the processor controls.

Weekly Care

The developer chemicals cause residue buildup in the machine. This residue has a negative effect on the developing process of the film material. For this reason the processor should be regularly cleaned. Proceed as follows:

1. Switch machine off and remove cover.
2. Loosen the securing latches (red, blue and beige) of the drive shafts of each roller rack at the right side.
3. Remove the roller-racks. First of all remove the large dryer-rack (beige). The racks are easier to remove and insert when they are slightly tilted. Use the grey drip catcher forms to ensure that no chemicals splash when being carried. Then remove the fixer (blue) and developer (red) racks in sequence.
4. Rinse all racks thoroughly under warm running water and then leave to drain off. It is advisable to use a soft sponge (do not use scouring-pad, as this would scratch the rollers) and remove any dirt from the rollers.
5. Replace the racks: Red = Developer, Blue = Fixer. Beige = Washing/Drying. Ensure that the racks are firmly installed and do not forget to close the securing latches on the drive shafts.
6. Replace machine cover and ensure it is securely closed.
7. Clean processor outer shell with damp cloth. Do not use aggressive cleaners or solvents.

Please note: When removing the Rinsing / Drying roller-rack, ensure that no water gets into the film dryer air channel.

Thorough Cleaning

Every three months (maybe earlier) a thorough cleaning is necessary, depending on the quantity of films processed. Tank cleaners are available for developer and water baths. The fixer bath is cleaned with water. When preparing chemical tank cleaners, follow manufacturers instructions explicitly.

How to proceed:

1. Switch the machine off and empty all tanks by opening the stop cocks.
2. Remove machine cover. When all tanks are emptied, close stop cocks again. Now fill the fixer tank with warm water. Prepare cleaner solutions for developer and water baths and fill into respective tanks.
3. Remove suction pipes from the replenishment containers and place them in a deep container filled with warm water. Attention: Do not add chemical cleaners here!
4. Close machine cover and switch machine on.
5. Start film transportation and keep running for 10 to 20 minutes. To start the film transport, place a film on the feed tray so that it activates the film switch but will not be pulled into the processor. During the operation with water, the installed roller racks will be cleaned.
6. Important: After completion of tank cleaning, the tank should be rinsed thoroughly with clean water. To do this, fill the machine with fresh water twice and each time, let the machine run for a 10 minute period. Empty the tanks and reclose the stop cocks.
7. Take out the roller-racks and rinse them thoroughly with running water. Remove remaining dirt from the rollers by using a sponge and clean thoroughly. Doing this, the rollers can be turned by turning the drive shaft. Remove the sheet metal covers from the dryer rack and clean the rack in warm water diluted with dishwashing soap, and rinse well after cleaning. Reinstall the roller-racks in the machine.
8. Refill the tanks with respective chemicals. To avoid accidental contamination, carefully refill the fixer tank first. If any fixer inadvertendly spills in the developer tank, thoroughly clean the developer tank and then refill the developer tank. Replace the suction pipes into the replenishment containers. In certain circumstances the circulation system must be ventilated: see page 9, item 1c.
9. For quality check, process test films.

Before You Go on Holiday...

When the processor will remain off and unused for periods longer than 2 weeks, the processor tanks should be emptied. Immediately after draining the chemistry from the tanks, the drain valves should be closed and water should be added to each tank. Upon return and prior to use, the processor should be cleaned and filled with fresh chemistry.

Attention: Do not use alcohol containing solvents to clean the machine!

Colour changes in the containers are caused by the properties of the chemicals and no cause for concern!

Maintenance / Disposal

Maintenance Protocol

Installation

Name:	Machine type:	Serial number:
Technician:	Training:	by:
Telephone:	Date:	Guarantee until:

Parameters Set

Developer temp.:	Dryer temp.:	Cycle time:
Dev. reg. volume:	Dev. reg. volume:	Anti-oxidation:
Developer:	Fixer:	Film type:
Changed by:	Date:	

Developer temp.:	Dryer temp.:	Cycle time:
Dev. reg. volume:	Dev. reg. volume:	Anti-oxidation:
Developer:	Fixer:	Film type:
Changed by:	Date:	

Developer temp.:	Dryer temp.:	Cycle time:
Dev. reg. volume:	Dev. reg. volume:	Anti-oxidation:
Developer:	Fixer:	Film type:
Changed by:	Date:	

Maintenance Performed (see page 17)

Maintenance work performed	Maintenance work performed	Maintenance work performed	Maintenance work performed	Maintenance work performed
Date:	Date:	Date:	Date:	Date:
Name:	Name:	Name:	Name:	Name:
next maintenance:	next maintenance:	next maintenance:	next maintenance:	next maintenance:

Maintenance work performed	Maintenance work performed	Maintenance work performed	Maintenance work performed	Maintenance work performed
Date:	Date:	Date:	Date:	Date:
Name:	Name:	Name:	Name:	Name:
next maintenance:	next maintenance:	next maintenance:	next maintenance:	next maintenance:

Maintenance work performed	Maintenance work performed	Maintenance work performed	Maintenance work performed	Maintenance work performed
Date:	Date:	Date:	Date:	Date:
Name:	Name:	Name:	Name:	Name:
next maintenance:	next maintenance:	next maintenance:	next maintenance:	next maintenance:

Attention:

Never start the machine up unless it is filled with liquid!

Recommended Maintenance Work:

1. Functional check
   film intake / film transport / replenishment / bath heating / dryer heating / water supply
2. Cleaning
   - 2.1. Switch off machine, remove cover
   - 2.2. Empty all three tanks
   - 2.3. Close drain cocks and fill tanks with water
   - 2.4. Install cover, switch machine on
   - 2.5. Fill two additional vessels with water, put suction pipes into these vessels and activate replenishment for at least two minutes (to remove residues of chemicals from replenishing hoses)
   - 2.6. Switch machine on for a few minutes
   - 2.7. Switch machine off
   - 2.8. Empty all tanks
   - 2.9. Prepare tank cleaning agent for developer and water tank according to manufacturer´s instructions

Attention:

Do not use chlorine containing cleaning agents!

   - 2.10. Fill developer and water tank with tank cleaning agent **(<u>do not</u> use the replenishment pumps to do so)**
   - 2.11. Fill fixer tank with water
   - 2.12. Place suction pipes into empty tanks
   - 2.13. Install cover, switch machine on
   - 2.14. Wait until the operating temperature is reached, approx. 30 °C (observe information concerning temperature, time, cleaning procedure contained in the datasheet of the tank cleaning agent)
   - 2.15. Activate manual programme and transport
   - 2.16. After approx. 15 minutes (observe information concerning temperature, time, cleaning procedure contained in the datasheet of the tank cleaning agent) switch film transport off
   - 2.17. Remove cover, neutralise developer tank (observe information concerning temperature, time, cleaning procedure contained in the datasheet of the tank cleaning agent)
   - 2.18. Switch machine off
   - 2.19. Empty all three tanks
   - 2.20. Fill machine with water and switch it on
   - 2.21. Put suction pipes into vessels with water
   - 2.22. Activate regeneration pumps for at least five minutes
   - 2.23. Check all pumps for tightness
   - 2.24. Switch machine off
   - 2.25. Drain tanks
   - 2.26. Fill tanks 3/4 with water
   - 2.27. Switch machine on
   - 2.28. Activate replenishment pumps manually until tanks overflow
   - 2.29. Activate film transport for a few minutes
   - 2.30. Switch machine off and drain all three tanks

2.31. Repeat item 2.20 to 2.30 if required (observe information e. g. concerning temperature, time and cleaning procedure outlined in tank cleaner datasheet)
2.32. Remove roller racks from the machine and remove dirt under flowing water using a soft rag or sponge
2.33. Remove residual dirt particles in tanks and rinsing gutters.
2.34. Clean all toothed gear wheels, axles, bearings and rollers, check them for damage (replace if required)
2.35. Remove light protection flap and wipe its underside using a soft rag
2.36. Clean inlet plate using a soft rag
2.37. Reinstall light protection flap
2.38. Align roller racks and re-insert them in machine
2.39. Fill machine with chemicals
2.40. Switch machine on
2.41. Adjust bath temperature to previously adjusted value
2.42. Feed cleaning film (approx. 4 pieces)
2.43. Check function as described under item 1.
2.44. Approx. 15 minutes after reaching of the set bath temperature, measure it for confirmation and re-calibrate if required (see operating manual page 39)
2.45. Perform sensitometric test

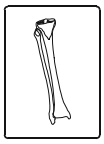
Please dispose of all old devices in an environmentally friendly manner.
Old devices contain materials which need to be recycled. Please have them collected separately and recycle appropriately.

Problems and Solutions

Troubleshooting Film Defects

Your processor has been constructed for long term use. However, if irregularities occur, the following information can help to solve the problem. Please check the following items before calling for service.

Films are too light, not enough density

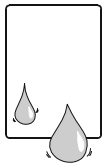


- Bath temperature is too low.
- Developing time too short.
- Exposure time is too short.
- Replenishment rate of developer too low.
- Developer is exhausted or over-diluted: Drain and replace old developer with fresh developer.
- Fixer solution has been mixed into developer: Renew. Thoroughly clean and rinse the developer tank before refilling.
- Circulation system is not operating properly.

Films are too dark, too much density

- Developer temperature too high.
- Developing time too long.
- Exposure time is too long.
- Replenishment rate of developer too high.
- Developer chemicals are too concentrated, mix with new developer.
- After replacing the chemicals: Starter is missing.
- Circulation system is not operating properly.

Films will not dry



- If warm air comes out of air channel in the dryer, chemicals and film type should be checked.
- Fixer solution is exhausted or diluted.

Film has a yellow-green surface.

- Not fixed correctly. Check the film type and fixer chemistry.
- Fixer solution is exhausted or diluted. Replenishment rate of fixer is too low.

Scratches, pressure marks, dirt on film

- Prior to processing films, run cleaner films through the processor.
- Pressure marks caused by careless handling, finger nails etc.
- Rollers are dirty. Clean tanks and roller racks.

Cloudy film

- Level in developer is too low.
- First guide bar of fixer rack is dirty (condensation or crystals). Clean roller-racks.
- Developer is old or circulation not working.
- For single emulsion film, feed films emulsion (dull) side up.

Troubleshooting Machine Errors

Machine does not switch on

- Ensure that electrical plug is firmly inserted into socket.
- Ensure that electrical socket has power supply by testing with an appliance (e.g. tablelight).

Film will not feed in but the dyer fan works

- Place cover firmly on machine, ensuring that the cover switch on the right front side has been activated.

Machine does not start automatically

- Film switch, located on the left side of the feed tray, has not been pressed down. Feed in the film to activate the switch.

Developer temperature too low

- The temperature dial is set between two positions.

Replenishment pump does not pump

- Check whether the replenishment containers are full and that the end of the suction pipe is positioned under the liquid level.
- Check whether there is air in the replenishment pipes. If this is the case, then check the pipe connections.

Rinsing water does not flow

- Open water ball valve.
- Water pressure in the water system is too low: Minimum pressure 2 bar (29 psi).

Water tank overflows

- Water drainage hose (overflow) is bent. The hose end should be positioned above the drainage level in the syphon (see diagram on page 8).
- Water drainage in the tank, hoses and connections should be checked for blockage and dirt/residue build-up. The drainage hoses should have a constant fall.

The film does not transport correctly

- Film is fed in and gets caught in the machine: Check the positioning of the racks in the machine and make sure that the latches are closed.

Important notice:

Ensure that the racks are firmly installed and keep the securing latches on the drive shafts closed.

Don't operate processor with empty replenishment tanks.

After a long machine shut down check developer and fixer levels and refill if necessary.

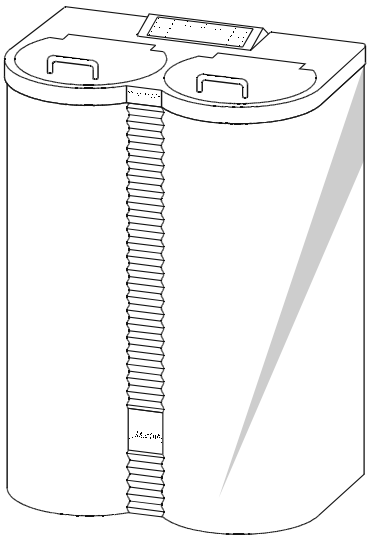
PROMIX® A40

The PROMIX® A40 is a fully automatic chemical mixing machine for preparing developer and fixer bath chemicals of either powder form or liquid concentrates. All stages are guided and controlled by means of a microprocessor. Thanks to a large reserve tank, up to 3 machines can be connected and continue to operate, without having to interrupt the working process.

Due to its patented construction, the PROMIX® A40 is easy to operate, reliable, fast and virtually service free.

The PROMIX® A40 replaces the usual replenishment tanks in the darkroom.

Ask your local dealer for more information.



Specifications

Tank capacities:	each 20, 25, 30 or 40 litres
Reserve tank:	each 13 litres
Water connection:	3/4", 2 - 10 bar (29 - 145 psi)
Pump capacity:	38 l/min
Mixing times:	variable, 2, 3, 5, 10, 15, 20, 25, 30 minutes
Power source:	220-240 VAC, 200 W, 50/60 Hz Fuse: sb 2 A / 250 V
Weight:	28 kg empty, 108 kg full
Dimensions:	(WxHxD) 65 x 93 x 44 cm

AIRCLEAN® 200

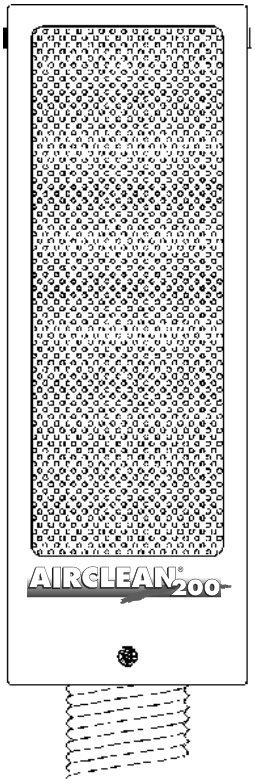
At last you can breathe again

AIRCLEAN® 200 cleans the air from your processor. Unpleasant chemical odors are absorbed through the large active charcoal filter. Allergies are prevented and you can breathe again freely.

Simple installation directly on to the processor (no breaking through the wall).

Filter exchange cheap and fast approx. every 3 months.

Ask your local dealer for more information.



Specifications

Cleaning capacity:	approx. 200 m^3/hour
Filter:	Active charcoal
Power consumption:	43 W
Power source:	220-240 V, 50/60 Hz
Weight:	7 kg
Casing:	Stainless steel, plastic coated
Casing dimensions:	(WxHxD) 21 x 63 x 17 cm

Service Manual

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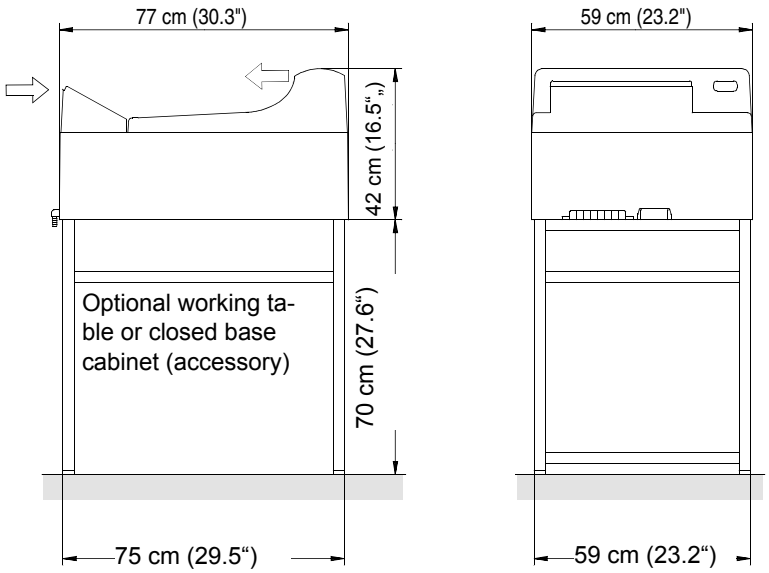
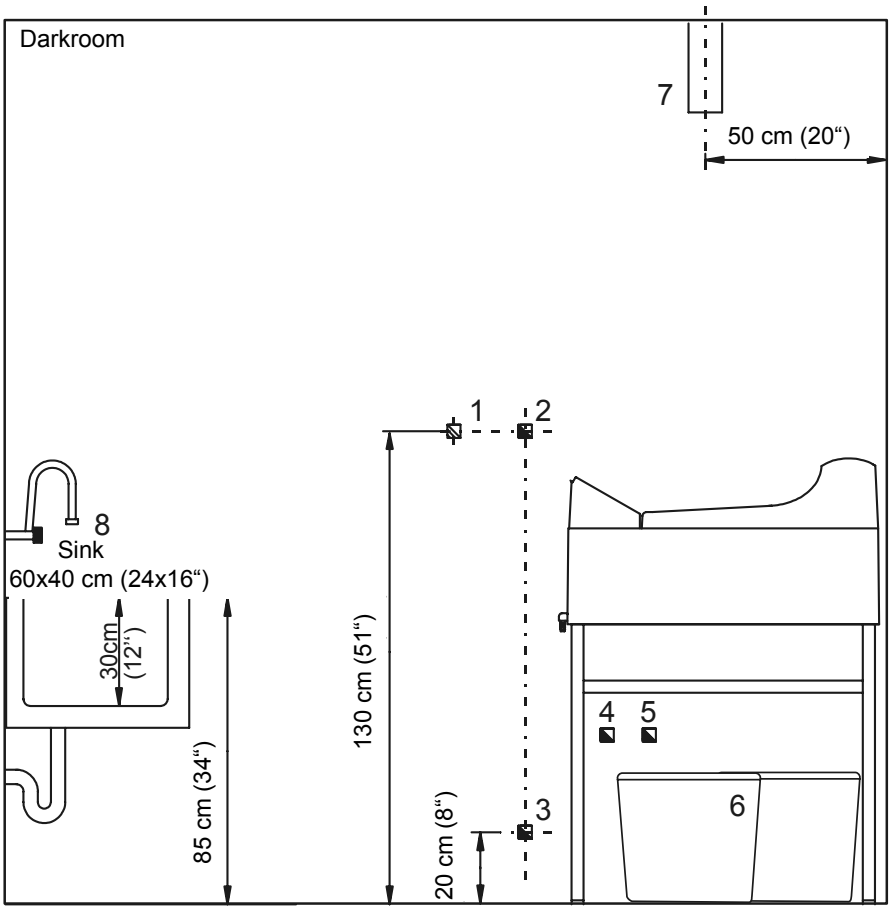
Installation Data



1. Wall socket
   220-240 V, 16 Aresp. 110 V, 15 A (depending on machine model). Power lead should be equipped with Earth-Leakage Switch, 25 A / 30 mA nominal error-current. In addition, a power control switch can be installed.
2. Fresh water connection 3/4” with stop cock, permissible pressure 2-10 bar, water temperature 5-25 °C.
3. Drainage plastic pipe (PVC) ∅ 50 mm (2“) incl. syphon.
4. Drainage resp. collecting containers for used developer.
5. Drainage resp. collecting containers for used fixer.
6. Storing space for replenishment tanks: Below machine or externally.
7. Ventilation of darkroom is necessary.
8. Sink with freshwater and flexible hose. Inner dimensions minimum (LxWxH) 60x40x30 cm (24x16x12“).

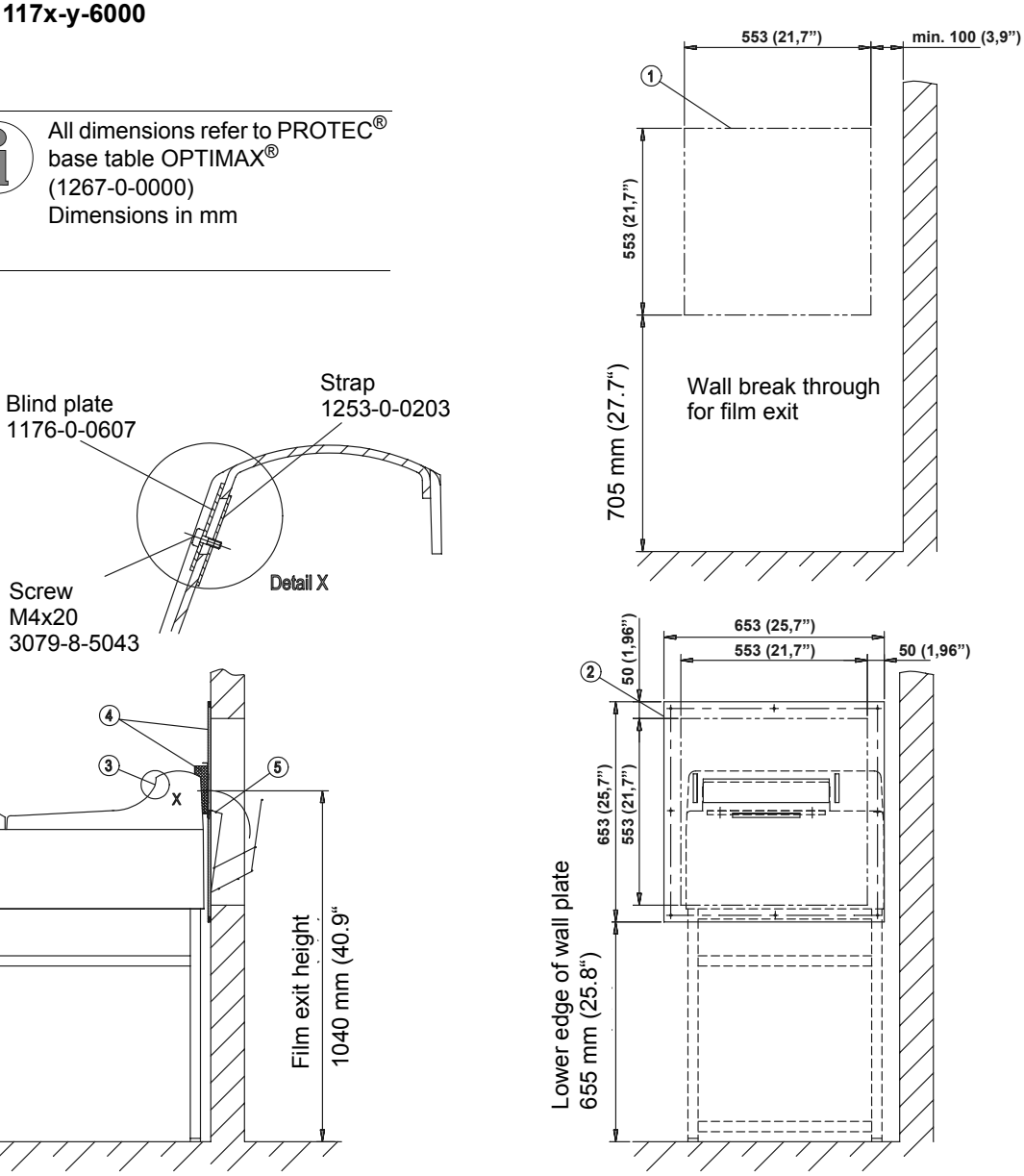


Measures and positions are recommendations

English

Through the wall mounting “film output”
Film output to the light room for OPTIMAX®processor
Type 117x-y-6000

All dimensions refer to PROTEC® base table OPTIMAX® (1267-0-0000)
Dimensions in mm



1. Wall opening according to drawing.
2. Fasten wallplate with enclosed eight screws (note markings).
3. Fix blind plate with screws and straps on the film outlet (Detail X).
4. Push processor up against wallplate and place foam rubber light protection between processor and wallplate.
5. Hang in film catch basket at wallplate from the backside.
6. Check mounting-set for light imper-meability and function.

Please notice:

Pull sealing wedge off before removing machine cover.

Trouble Shooting

Summary

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1 Algae

1.1 Excessive algae growth in water tank

- Algae growth inside the water tank is not only anoying, it causes increased cleaning work and leaves residue on the films. When algae is present, corrective measures are required:
- When work has been completed at the end of the day, drain water out of the machine.
- Clean dryer-water rack regularly. Use soft sponge and soap to remove residue from the rollers.
- Install a particle filter system in the fresh water supply for the processor.
- If water tank overflows due to algae growth blocking the overflow hose, then the overflow hose can be attached directly to the connection at the water tank inside the machine.
- If no other solutions can be found, then usage of Anti-Algae-Agents can be a great improvement (automatic dispensers work the best). However, it is known that cleaning agents containing chlorine may corrode rubber rollers and high-grade steel in the tank area (check before use).

2 General

2.1 Machine has no power

- Ensure that electrical socket has power supply.
- Check machine fuse in main power switch.
- While power switch is on, check the following components: Voltage on contact of main switch - if no voltage - change main switch. Check input voltage at electronics. If the voltage is normal, exchange the electronics. if no voltage check the cable wiring harness.

As replacement fuses, please excusively use PROTEC gold fuses. These fuses are optimally adapted to the existing conditions.

3 Drive

3.1 Filmfeed out of order, dryer-fan is working

- When placing processor cover on, the cover switch should be activated, re-adjust if necessary.
- Cover switch has no current passage when activated: Replace.
- Check screwing of chain wheel on motor- and driveshaft.

3.2 Machine does not start automatically

- Film switch is not correctly positioned or operator wire is bent. Re-adjust film switch and operator wire.
- Check following parts: Film switch, wiring of film switch and microprocessor board.
- Check wiring from electronic to the connections of components (motor, fan, dryer heating, solenoid valve). If the connections have no fault then electronic is possibly defective.

3.3 Machine doesn't stop automatically

- Display “film feed” is permanently illuminated: Wire band of film switch is jammed. Readjust wire.
- Check following parts: Film switch, wiring of film switch and microprocessor board.

3.4 Drive motor does not run

- Check cover switch.
- Check drive motor: If voltage can be detected on motor, then motor is defective.
- Dryer fan runs but no voltage on motor: Interruption in the wiring.

3.5 Transport stops before film comes out, changing the cycle time

The cycle time is the processing time which turns off after a film has passed the film switch. Activate the switch in the feed tray with a film and remove the film. Measure the time until the processor stops automatically.

Following times can be measured (+/- 5%):

Standard machine:	125 s	Jumper 2-3
Mammography:	155 s	Jumper 1-2
Optional type:	190 s	Jumper removed

Change cycle time if necessary. This can be accomplished by changing the position of the jumper on the upper side of the electronics.

3.6 Processing time and developer temperature relation

The following chart demonstrates guide value relations between developer temperatures and processing times. Variations are possible depending on the various films and chemicals. Changing the transport speed see 3.7.

Processing time "Dry to Dry"	Developer temperature
105 s	32 °C - 34 °C
118 s	32 °C - 34 °C
135 s	31 °C - 33 °C
143 s	30 °C - 32 °C
167 s	30 °C - 32 °C

3.7 Changing the transport speed

The processing speed can be changed by changing the gear wheels. To do this the tanks need to be emptied and the machine be turned over. After removing the drive motor the chain gears can be changed. Please note that the jumper on the PCB needs to be placed to the indicated position.

Following gear combinations are available:

220-240 V, 50/60 Hz-Versions 110-120 V, 50 Hz-Versions						110-120 V, 60 Hz Versions					
t	**Gm**	**Gs**	**Jumper position**	**Devel-oper time (s)**	**Infeed speed (cm/min)**	**t**	**Gm**	**Gs**	**Jumper position**	**Devel-oper time (s)**	**Infeed speed (in/min)**
105	t=17	t=16	2-3	29	48	105 (90)	14	16	2-3	29	18.9
118	t=16	t=17	1-2	32	43	113	14	17	2-3	31	17.6
135	t=14	t=17	1-2	37	37	124	12	16	1-2	34	16.0
143	t=14	t=18	removed	39	35	132	12	17	1-2	36	15.0
167	t=12	t=18	removed	46	30	139	12	18	1-2	38	14.3

t = Processing time in seconds
Gm = Chain wheel on motor shaft
Gs = Chain wheel on drive shaft

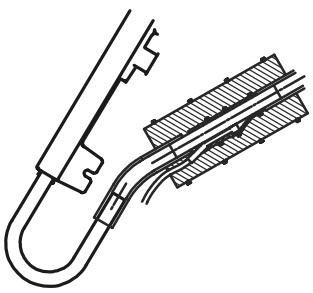
4 Bath

4.1 No circulation in bath

- Circulation pump works but no circulation in bath: Air lock in heating and circulation system. Ventilate pump (see Page 9).
- Particles in the pump chamber. The pump chamber can be easily opened by removing the four clips. When closing again ensure that the rubber seal is positioned correctly and not damaged.
- Check connection of pump, circulation pump possibly defective.

4.2 Developer temperature too high

- Check attachment of temperature sensor. This should be firmly positioned on tube and completely covered with foam rubber.
- Check sensor: At ambient temperature voltage between pin 3 (green) and pin 2 (brown) must be between 0.1 and 0.5 V.
- If the sensor has no fault then the microprocessor board is defective.

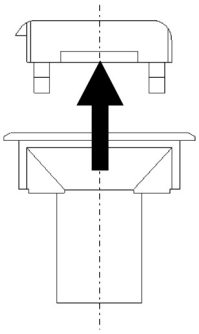


4.3 Developer temperature too low

- Check circulation pump. Air lock in the circulation pump: Ventilate pump (see Page 9). If no circulation can be detected: Check wiring of circulation pump, pump possibly defective.
- Developer is not heated: Check temperature safety switch on heat-exchanger. Check heating element: Current flow resistance should read approx. 66 Ω (120 V-heating: 36 Ω).
- Check temperature sensor (see 4.2).
- If no error can be found then the microprocessor board is possibly defective.

4.4 Developer temperature too low, fixer temperature too high

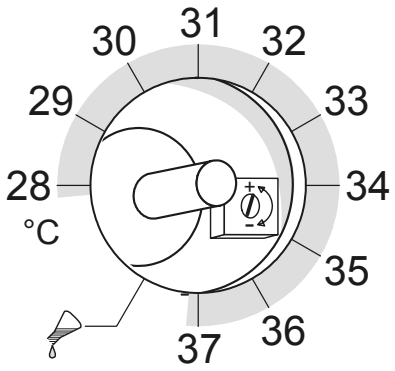
- Air lock in the circulation pump: Ventilate circulation (see Page 9).



Do not exchange PCB without removing knob!

4.5 Removing the turning knob

- Using flat pliers pull the lever from the knob, while holding the bottom part (knob) down with the other hand.
- Open the screw of the collet (Attention: don't open completely) and pull the knob out.
- When reinstalling the knob turn axis on PCB to end position counter clockwise. Fix the knob in that the pointer is at position of "Manual pumping".



4.6 Calibration of developer temperature

Deviating temperatures within +/- 1.5 °C can be calibrated by a potentiometer on the PCB. It can be reached after removing the turning knob (see 4.5) from above. Turning clockwise decreases the temperature.

5 Film defects

5.1 Films will not dry

- No air comes out of air channel: Check wiring of dryer fan, fan is possibly defective.
- Cold air comes out of air channel: Check wiring of heating element in the air channel, heating element possibly defective.
- Hot air comes out of air channel, but the film is still not dried to satisfaction. Check chemicals and film type. If this leads to no solution then the transport speed of the machine can be reduced (see Changing the transport speed, page 28).

5.2 The film does not transport correctly

- Check the positioning of the racks in the machine and make sure that the latches are closed.
- Check the roller racks: Position of the guide elements, rollers are in correct position and are not loose, flat springs are not bent, all gears are in place.
- Motor runs: The worm gear of the drive shaft should be secured with a cotter pin (see page 29, pos. 38) to avoid twisting. Check the screws and positioning of the chain and chain wheel.

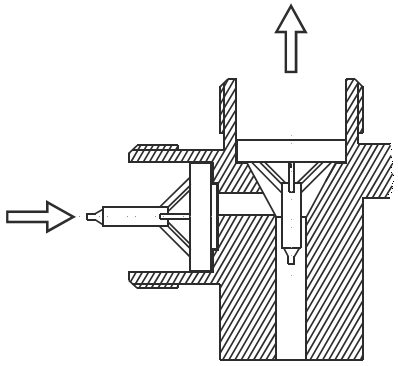
5.3 Scratches, pressure marks, dirt on film

- Straight scratches in the feed direction indicate faulty guide elements. Check each rack and straighten up the guide elements. If mechanically damaged, replace the guide elements.
- Pressure marks caused due to dirty or damaged rollers. Check rollers for visible damage. Rubber rollers sometimes swell. Exchange defective rollers.

6 Replenishment

6.1 Replenishment pump does not pump or does not pump sufficiently

- Clean valve inside connection tube.



Install valve insert correctly: Pay attention to flow-through direction!

- Check filter in the suction pipe (repl. container) and clean it if necessary.
- Replenishment pump sucks air in. Check hoses and connections.
- Check eccentric position. Capacity approx. 240 ml/min at setting to 100 %. (60 Hz: 240 ml/min at 85 %)
- Activate the “Manual pumping” and while on, check the voltage of connection X2 on the power PCB. If no voltage can be registered - exchange power PCB.

6.2 Replenishment rates are too high or too low

- The replenishment rate can be changed by adjusting the stroke of the pump. To do this, the eccentric on the replenishment pump must be adjusted. Maximum pump capacity is 240 ml/min(100 %).

6.3 Adjust replenishment pump

- For the adjustment of the eccentric first open the allan screw on the big eccentric with the red line. If the screw is not reachable, then start the “Manual pumping” (dial switch) for a short time. If the screw is not reachable, momentarily rotate the temperature switch to “Manual pumping”. When the screw is reachable, quickly turn the temperature switch back to a temperature position.
- Turn the eccentric so that the red line will be at the desired position and fasten the allan screw.

Minimum setting must not be below 75 %.

7 Dryer

7.1 Dryer fan does not function or runs with reduced speed

- Check the correct connecting of the fan cables: bl = blue; bk = black; br = brown.
- If the fan is connected improperly, then the fan runs only half power.

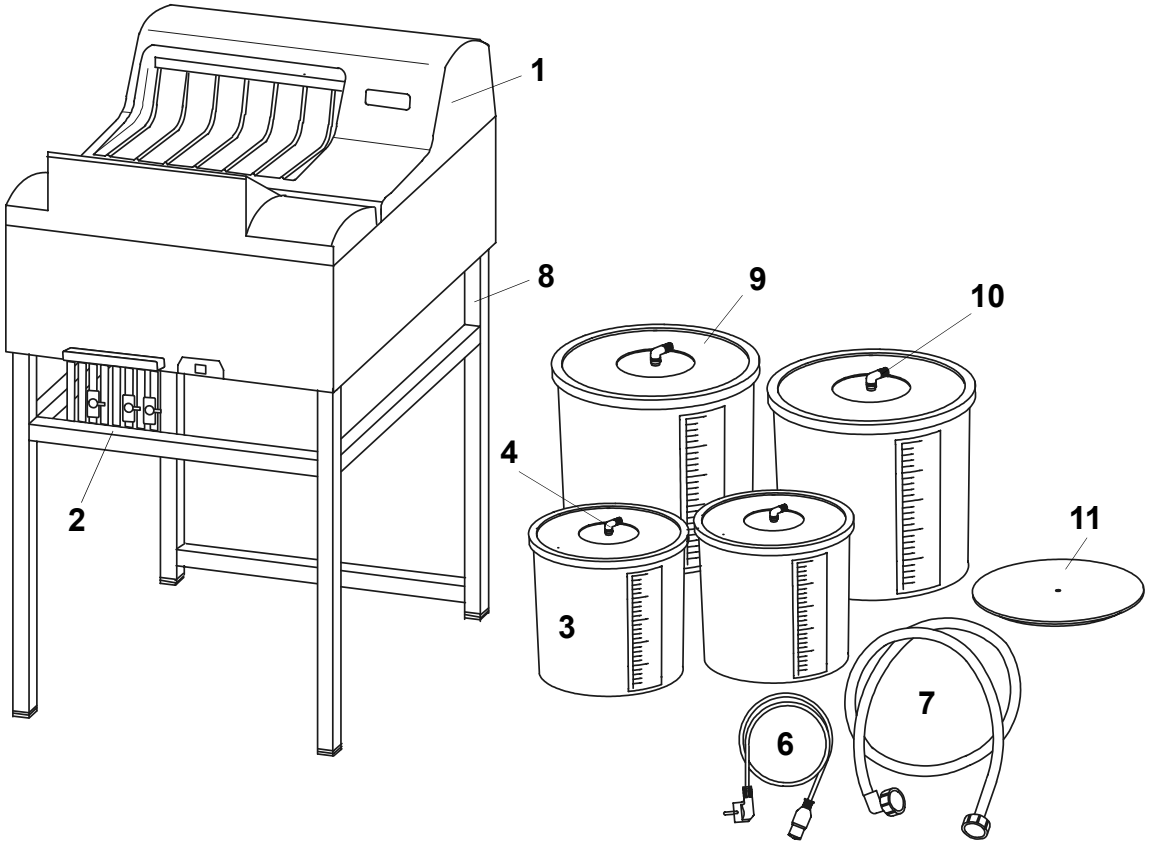
8 Water

8.1 Rinsing water does not flow

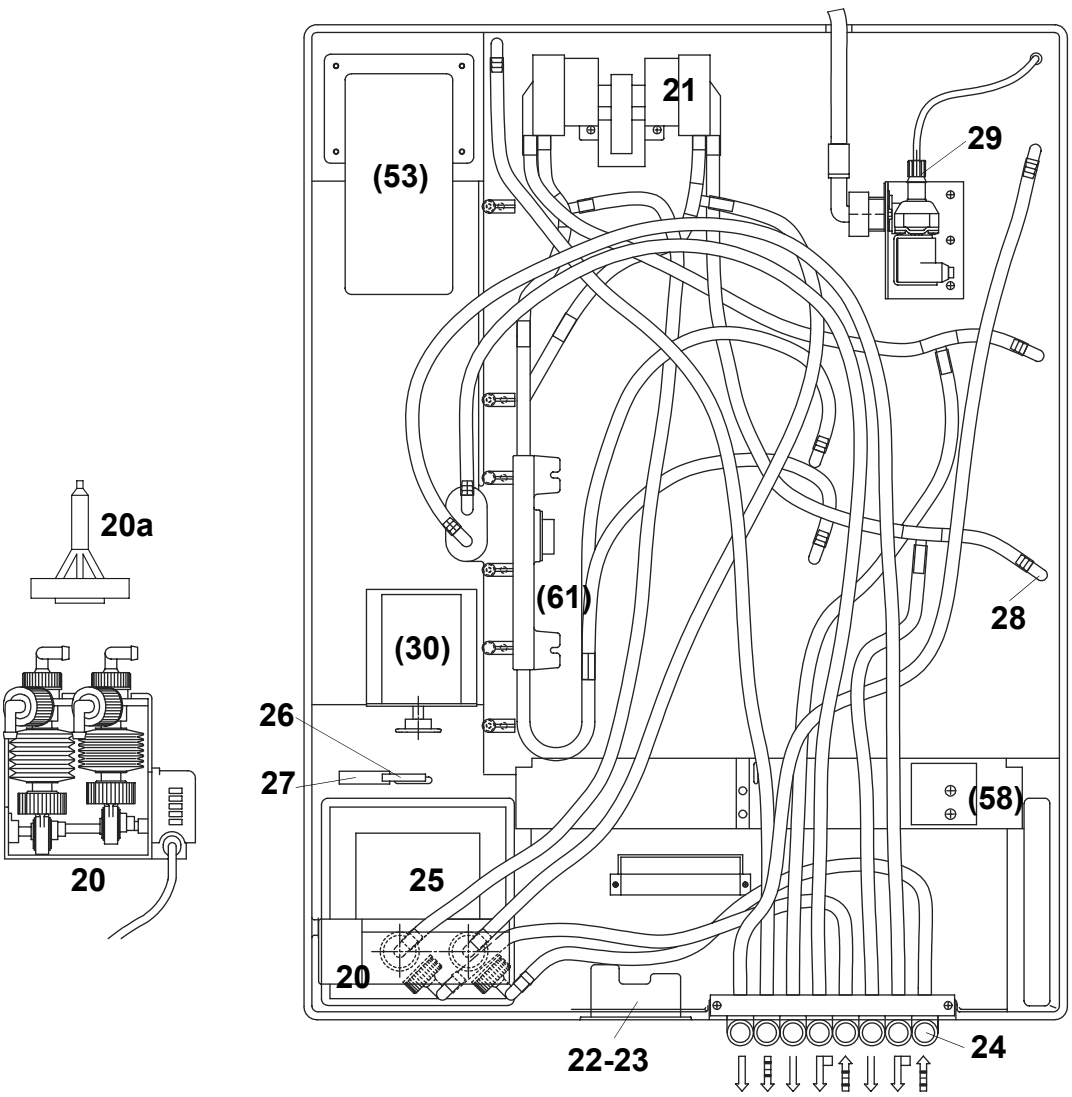
- Water pressure in the water system is too low: Minimum pressure 2 bar (29 psi).
- Valve activates, no flow passage - filter at inflow is blocked.
- Check green water inlet hose inside the machine.

8.2 Water tank overflows

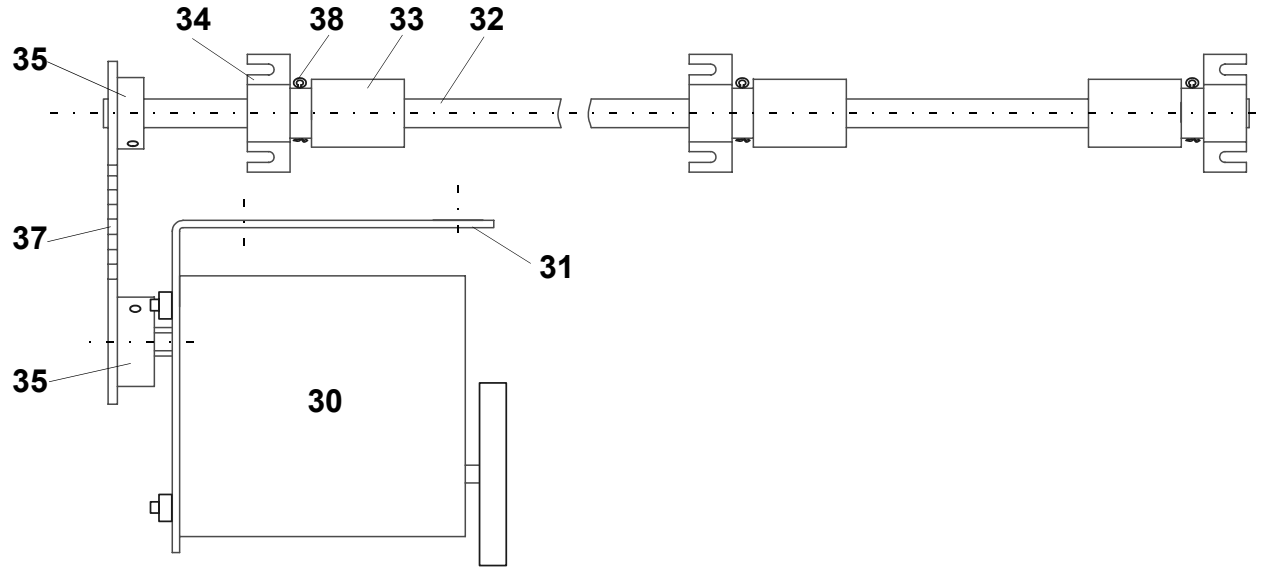
- Water drainage hose (overflow) should have a constant fall. The hose end should be positioned above the drainage level in the syphon.
- Check water drainage in the tank and hose for blockage and dirt/build-up.
- When extreme algae growth is present, the overflow can be connected directly onto the fitting of the water tank.



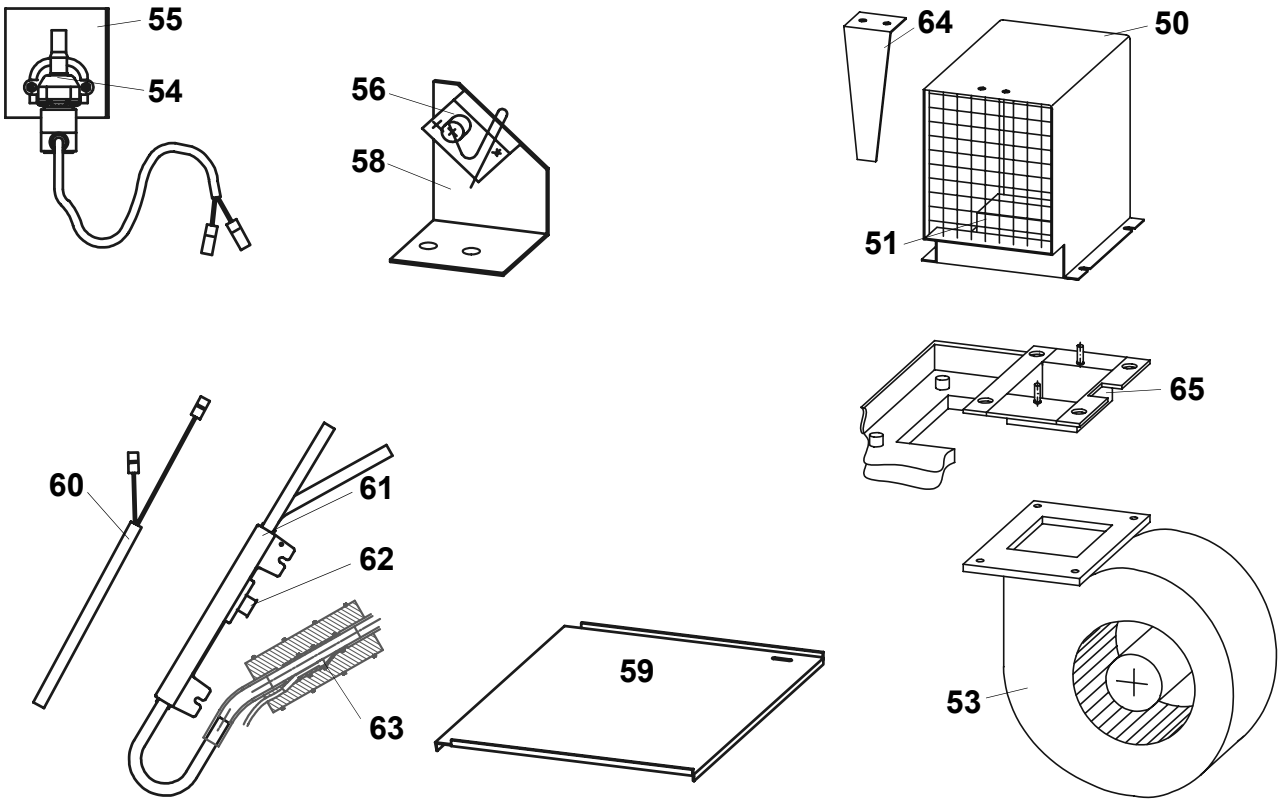
Pos.	Order No.	Description
1	1170-0-0200	Cover complete
2	2006-0-0005	Drain stop cock 10 mm
3	1170-0-2000	Replenishment tank 12 l dev.
	1170-0-2100	Replenishment tank 12 l fix.
4	1170-0-1750	Suction pipe w. filter f. 12 l tank
6	2004-0-0003	Electrical power lead 220-240 V
	2004-0-0021	Electrical power lead 110-125 V
7	2018-0-0001	Water inlet tube
8	1267-0-0000	Processor stand
-	1267-0-0010	Closed base cabinet
9	1101-0-2000	Replenishment tank 25 l dev.
	1101-0-2100	Replenishment tank 25 l fix.
10	1101-0-1700	Suction pipe w. filter f. 25 l tank
11	1101-0-4100	Floating cover, developer
-	2018-0-0012	Hose 10 x 2 mm, clear, reinforced
-	2018-0-0009	Hose 10 x 2 mm, blue, reinforced
-	2018-0-0008	Hose 10 x 2 mm, red, reinforced
-	2018-0-0005	Hose 4 x 1 mm, green
-	2018-0-0003	Hose 9 x 2 mm, clear
-	2022-0-0004	Tube clamp
-	2022-0-0019	Wire tube clamp
-	2022-0-0026	Wire tube clamp
-	2022-0-0028	Wire tube clamp
-	2015-0-0001	Floating balls



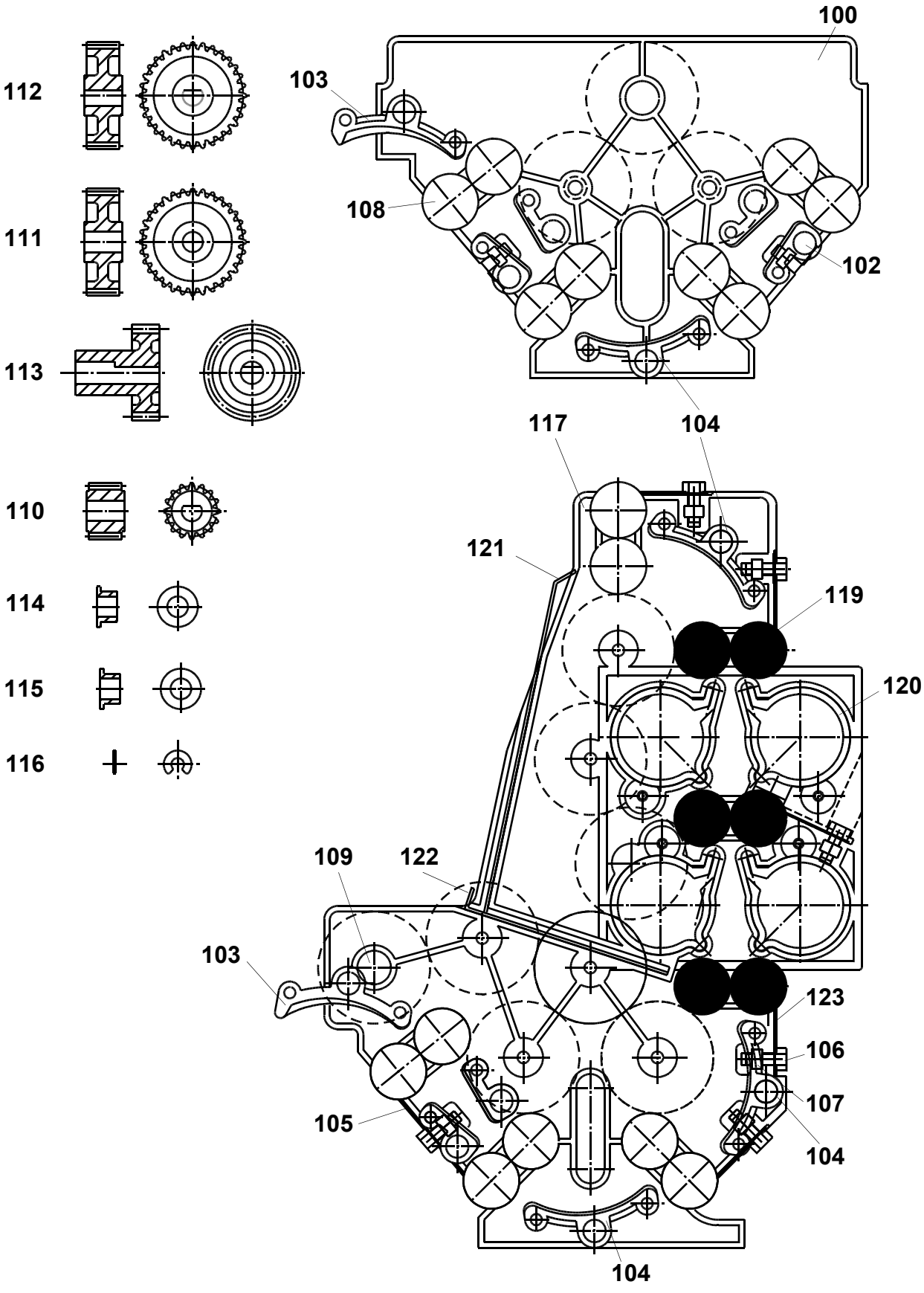
Pos.	Order No.	Description
20	0202-1-0008	Replenishment pump 2KBA 220-240 V, 50/60 Hz
	0202-6-0008	Replenishment pump 2KBA 115 V, 50/60 Hz
20a	0002-1-0008	Valve insertion f. pos. 20
21	2002-1-0013	Circulation pump 220-240 V, 50/60 Hz
	2002-6-0013	Circulation pump 110 V, 50/60 Hz
22	1170-0-1400	Main switch combi 220-240 V UL
23	2010-0-0010	Fuse, slow blow in gold, 10 A / 250 V UL
22+23	2028-0-0036	Main switch 110-120 V UL
24	1170-0-0702	Angle connection (grey)
25	1170-5-1300	Electronic 220-240 V
	0170-6-1300	Electronic 110-120 V
26	0170-0-2400	Micro-switch (cover)
	0170-4-2400	Micro-switch (cover) UL
27	2007-0-0010	Operator for micro-switch
28	1101-0-0704	Angle fitting
-	0016-0-0002	PU - glue kit
29	2021-0-0001	Screw-in connector
-	1170-0-1250	Wiring harness V2 230 V
-	1170-0-1251	Wiring harness V2 115 V



Pos.	Order No.	Description
30	2001-0-0003	Main drive motor 220-240 V, 50 Hz
	2001-2-0003	Main drive motor 220-240 V, 60 Hz
	2001-6-0003	Main drive motor 120 V, 50/60 Hz
31	1170-0-1101	Motor bracket
32	1170-0-1501	Drive shaft worm-gear
33	1170-0-1503	Worm-gear
34	1170-0-1502	Bearing block
35	1170-0-1506	Chain wheel t=12
	1170-0-1504	Chain wheel t=14
	1170-0-1505	Chain wheel t=16
	1170-0-1102	Chain wheel t=17
	1170-0-1507	Chain wheel t=18
37	2037-0-0002	Chain 6 mm with coupler link
38	3000-9-4013	Cotter pin 2.0x20 mm, inox

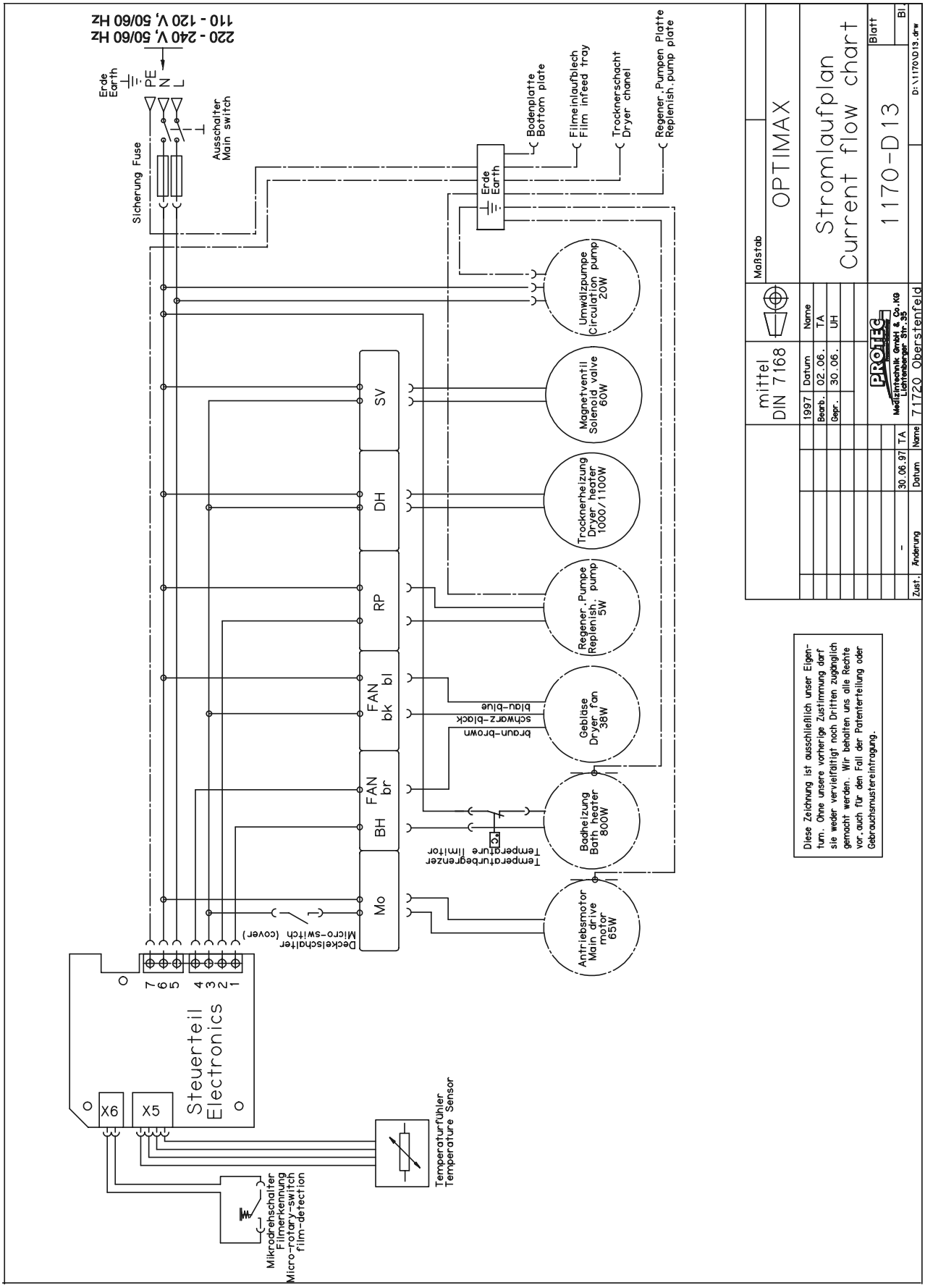


Pos.	Order No.	Description
50	1170-0-1301	Air channel
51	2003-5-0006	Heating elment 230 V, 1100 W
	2003-6-0007	Heating element 110 V, 900 W standard model
	2003-5-0008	Heating element 230 V, 1000 W
53	2008-5-0007	Dryer fan 220-240 V, 50/60 Hz
	2008-6-0007	Dryer fan 115 V, 50/60 Hz
54	0170-5-1900	Solenoid valve 220-240 V, 50/60 Hz
	0170-6-1900	Solenoid valve 115 V, 50/60 Hz
55	1101-0-0121	Securing bracket
56	0170-0-0800	Micro-rotary-switch for film-detection with operator
58	1170-0-0804	Bracket for micro-rotary-switch
59	1170-0-0105	Film feed tray
	1172-0-0105	Film feed tray graphic arts
60	2003-5-0002	Heating element 230 V, 800 W
	2003-6-0002	Heating element 120 V, 400 W
61	1130-0-2101	Heat exchanger
62	2005-0-0005	Temperature safety switch mounted on heat exchanger
63	0190-0-2200	Temperature sensor
64	1170-0-1303	Plate for air channel
65	1170-0-1302	Channel dryer heating



Standard roller racks

Pos.	Order No.	Description
		Mammography Processor
-	1171-0-0600	Roller rack, dryer
		Graphic Arts Processor
-	1172-0-0300	Roller rack, developer
-	1172-0-0600	Roller rack, dryer
		Standard Processor
-	1170-0-0300	Roller rack, developer
-	1170-0-0400	Roller rack, fixer
-	1170-0-0600	Roller rack, dryer
100	0170-0-0301	Side plate dev. w. shafts (left)
	1170-0-0301	Side plate dev. (right)
	0170-0-0401	Side plate fix. w. shafts (left)
	1170-0-0401	Side plate fix. (right)
102	1140-0-3800	Guide bar straight, short
103	1140-0-4500	Guide bar with nose
104	1140-0-3700	Guide bar, curved
105	1170-0-0304	Flat spring 55
106	3079-8-5013	Screw M4x10, A4
107	3009-3-4023	Hexagon nut M4, A4
108	1140-0-0301	PU-roller 35 ground
109	1170-0-0310	Drive shaft rack
110	1101-0-0302	Gear t = 16, D-hole
111	1101-0-0304	Gear t = 32, round hole
112	1101-0-0303	Gear t = 32, D-hole
113	1170-0-0302	Wormgear
114	1101-0-0305	Bearing bush
115	1101-0-0317	Bearing bush, black
116	2014-0-0001	Circlip
117	0170-0-0601	Dryer side plate left w. shafts
	1170-0-0602	Dryer side plate right
119	1140-0-0302	Rubber roller 35
120	1140-0-0605	Air jet (35)
121	1170-0-0604	Dryer plate, large
122	1170-0-0603	Dryer plate, small
123	1170-0-0303	Flat spring 35
-	0170-0-0004	Maintenance set


220 - 240 V, 50/60 Hz
110 - 120 V, 50/60 Hz
Erde Earth
PE N L
Sicherung Fuse
Ausschalter Main switch
Bodenplatte Bottom plate
Filmeinlaufblech Film infeed tray
Trocknerschacht Dryer chanel
Regener. Pumpen Platte Replenish. pump plate
Umwälzpumpe Circulation pump 20W
Magnetventil Solenoid valve 60W
Trocknerheizung Dryer heater 1000/1100W
Regener. Pumpe Replenish. pump 5W
Gebläse Dryer fan 38W
Badheizung Bath heater 800W
Antriebsmotor Main drive motor 65W
SV
DH
RP
FAN bk bl
FAN br
BH
Mo
braun-brown
schwarz-black
blau-blue
Temperaturbegrenzer Temperature limiter
Deckelschalter Micro-switch (cover)
Steuerteil Electronics
X6
X5
Mikrodrehschalter Filmerkennung Micro-rotary-switch film-detection
Temperaturfühler Temperature Sensor
Maßstab
OPTIMAX
Stromlaufplan Current flow chart
1170-D13
Blatt
Bl.
mittel DIN 7168
1997 Datum Name
Bearb. 02.06. TA
Gepr. 30.06. UH
PROTEC Medizintechnik GmbH & Co. KG Lichtenberger Str. 35
71720 Oberstenfeld
Zust. Änderung Datum Name
- 30.06.97 TA
D:\1170\D13.drw
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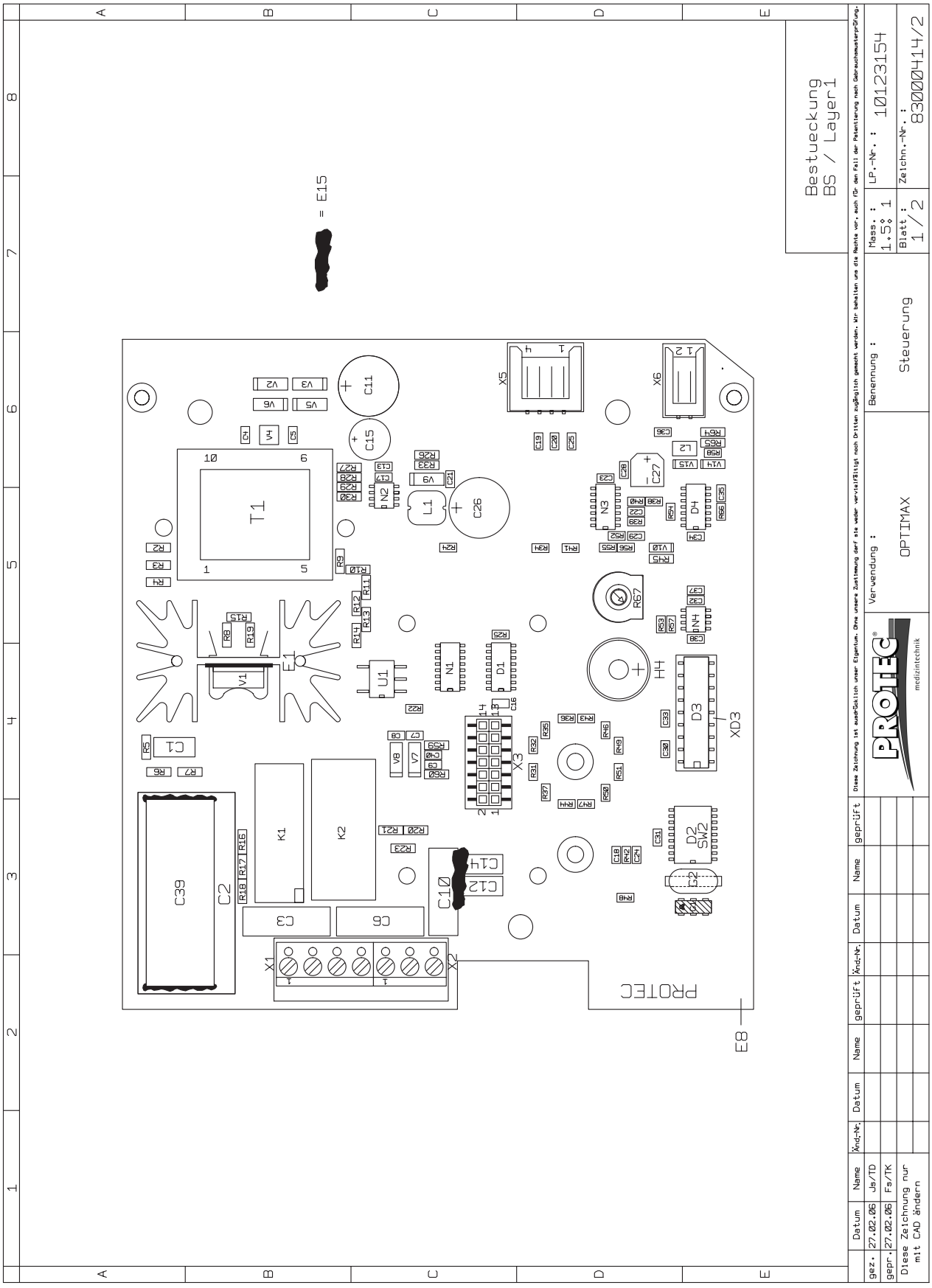
Bestueckung
BS / Layer1
= E15
T1
C11
C15
C26
L1
N2
N3
N4
D1
D2
D3
D4
U1
V1
E1
H4
RG7
X1
X2
X3
X5
X6
K1
K2
C39
C2
C3
C6
C10
C12
C14
C1
XD3
SW2
E8
PROTEC
Bestückung nur mit CAD ändern
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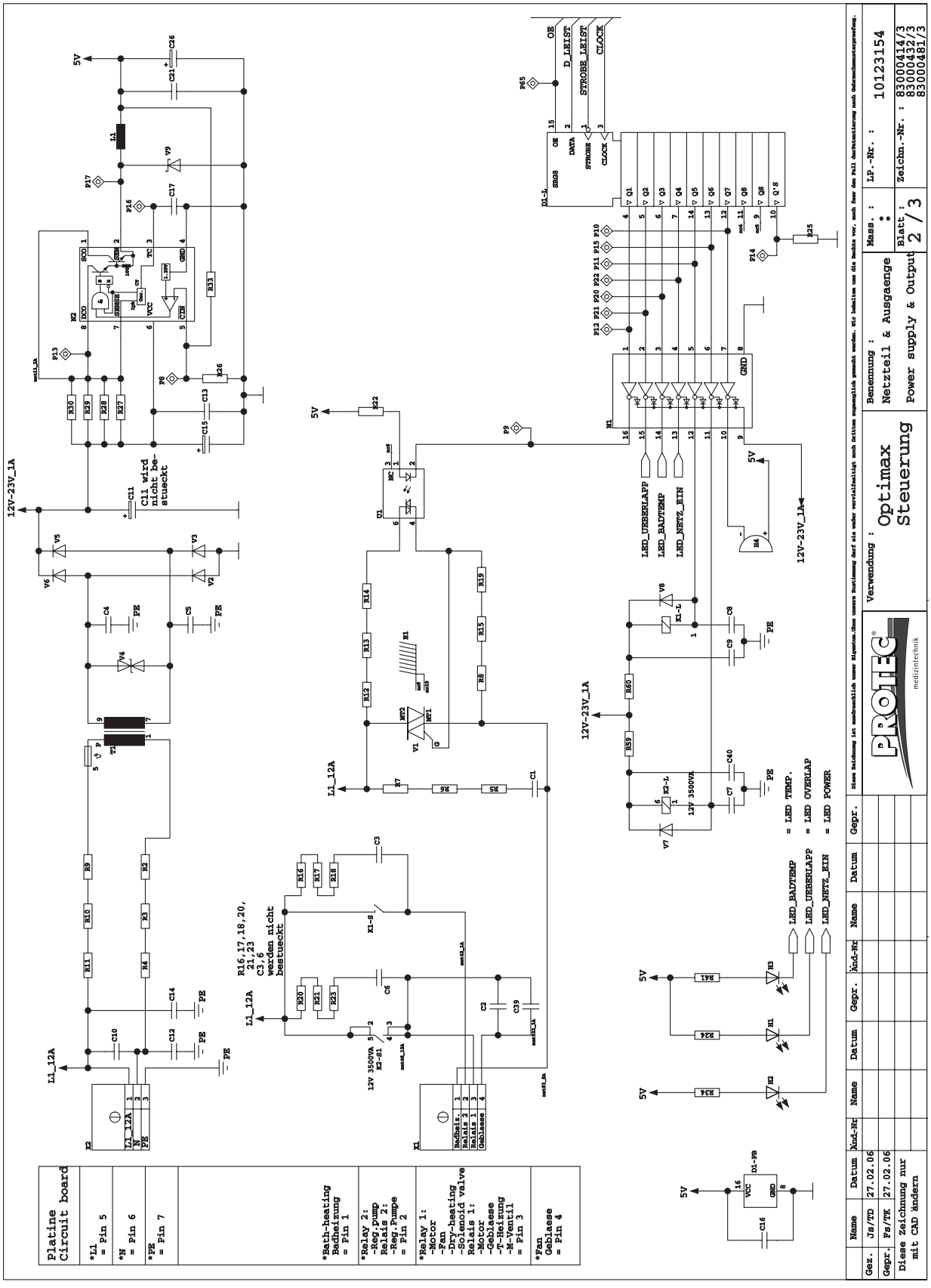
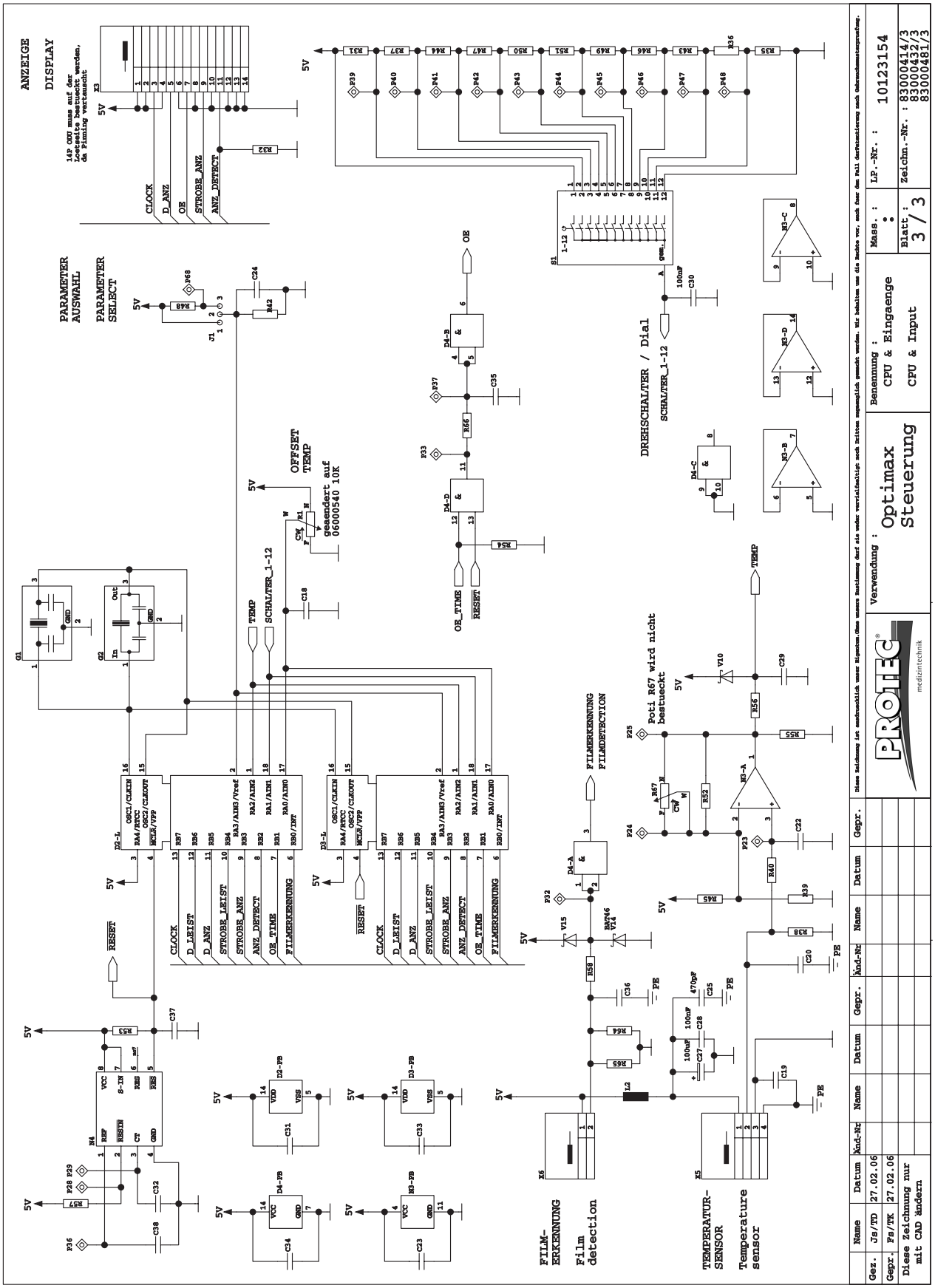
Verwendung : OPTIMAX
Benennung : Steuerung
Mass. : 1.5:1
Blatt : 1/2
LP.-Nr. : 10123154
Zeichn.-Nr. : 830004414/2
PROTEC medizintechnik
gez. 27.02.06 Js/TD
gepr. 27.02.06 Fs/TK


Platine
Circuit board
*L1 = Pin 5
*N = Pin 6
*PE = Pin 7
*Bath-heating Badheizung = Pin 1
*Relay 2: -Reg.pump Relais 2: -Reg.Pumpe = Pin 2
*Relay 1: -Motor -Fan -Dry-heating -Solenoid valve Relais 1: -Motor -Gebläese -T-Heizung -M-Ventil = Pin 3
*Fan Gebläese = Pin 4
Optimax Steuerung
Power supply & Output
Netzteil & Ausgaenge
2 / 3
10123154
830000414/3
830000432/3
830000481/3
12V-23V_1A
L1_12A
5V
PE
C11 wird nicht bestueckt
R16,17,18,20, 21,23 C3,6 werden nicht bestueckt
LED_UEBERLAPP
LED_BADTEMP
LED_NETZ_EIN
= LED TEMP.
= LED OVERLAP
= LED POWER
D_LEIST
STROBE_LEIST
CLOCK
GND

English


ANZEIGE
DISPLAY
PARAMETER AUSWAHL
PARAMETER SELECT
OFFSET TEMP
geaendert auf 06000540 10K
DREHSCHALTER / Dial
SCHALTER_1-12
Poti R67 wird nicht bestueckt
FILMERKENNUNG
FILMDETECTION
FILM-ERKENNUNG
Film detection
TEMPERATUR-SENSOR
Temperature sensor
Optimax Steuerung
CPU & Eingaenge
CPU & Input
LP.-Nr. : 10123154
Zeichn.-Nr. : 83000414/3 83000432/3 83000481/3
Blatt: 3 / 3